

STATIC CHARGE

When materials are rubbed together, you might see them cling to each other or move away from each other. Materials that behave in this way are said to carry an electric charge. When a charge stays in place for some length of time, it is described as static electricity or **STATIC CHARGE**.

Recall that all matter is made up of atoms. Most of the mass of an atom is in its nucleus. The nucleus is made up of protons (positively charged particles) and neutrons (no charge). Electrons (negatively charged particles) circle around the nucleus.

The overall charge of a material depends on the balance between the positive and negative charges in all the atoms of the material. A material may be neutral, have a positive charge, or have a negative charge.

When two materials are rubbed together, electrons from the atoms of one material may move to the atoms of the other material. The movement of electrons from one atom to another changes the charge on the atoms. When an atom loses electrons, it is left with more protons than electrons, so its charge is positive. When an atom gains electrons, it has more electrons than protons, so its charge is negative.

You already know that charges can be produced by rubbing (friction). This can happen in nature when air rubs against ice crystals and dust particles in clouds, producing lightning.

Electrons cannot move easily in materials such as acetate (a type of plastic), rubber, wool, and glass. Materials that do not let electrons move through them easily are called **INSULATORS**. Charges tend to build up on insulators.

Electrons can move easily through materials such as metals. Materials that let electrons move through them easily are called **CONDUCTORS**.

Sometimes, a conductor is used to transfer static charges from an object to the ground. Allowing charge to flow into the Earth's surface is called **GROUNDING**.

Electric charges are measured in units called **COULOMBS (C)**. A bright light bulb, for example, allows about 1 C (one coulomb) of electric charge to pass through it each second.